AMENDMENTS TO THE CLAIMS

A detailed listing of all claim(s) that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier.

49. (Withdrawn) An eye treatment system comprising:

a treatment laser for emitting a treatment laser beam;

a deflecting unit for deflecting the treatment laser beam;

a control unit to control an emission and a positioning of the treatment laser beam in space and time;

a calibrating body and a holder for said calibrating body, said calibrating body ablatable by at least a portion of said treatment laser beam emitted by the treatment system; and

a system parameter determining device to determine at least one actual value of a system parameter of the system or a deviation from a desired value of at least one system parameter of the system.

50. (Withdrawn) The system of claim 49, wherein said holder is selectively movable in and out of a path of said treatment laser beam.

51. (Withdrawn) The system of claim 50, further comprising a carrier and an examining unit, said examining unit operably supported at said carrier and selectively movable in and out of said path.

52. (Withdrawn) The system of claim 49, further comprising a mirror unit comprising a mirror selectively movable between two positions, such that said treatment laser beam is directable onto an eye or onto said calibrating body according to the positions of said mirror.

53. (Withdrawn) The system of claim 52, further comprising focusing optics and a beam splitter, said beam splitter selectively positionable in a path of said treatment laser beam, wherein at least one of said mirror or beam splitter is selectively arranged following said focusing optics or said deflecting unit of the treatment system.

54. (Withdrawn) The system of claim 52, further comprising a drive, said mirror selectively movable between said positions by said drive.

55. (Withdrawn) The system of claim 54, wherein said selective movement of said mirror is operably synchronized with an emission of said treatment laser beam.

56. (Withdrawn) The system of claim 49, further comprising a beam splitter selectively positionable in a path of said treatment laser beam, such that a partial beam can be split from said treatment laser beam for ablation of said calibrating body outside of said treatment laser beam path.

57. (Withdrawn) The system of claim 49, further comprising at least one of an operably integrated aberrometer or an operably integrated profilometer.

58. (Withdrawn) The system of claim 57, wherein said at least one of the aberrometer or profilometer is adapted to examine an eye.

59. (Withdrawn) The system of claim 49, further comprising a measurement beam comprising a measurement beam path, said measurement beam path at least partially colinear with a treatment beam path of said treatment laser beam or of a partial beam split therefrom for ablating said calibrating body.

60. (Withdrawn) The system of claim 49, wherein said system parameter determining device comprises a correction value determining device to determine at least one correction parameter value as a function of at least one of the actual value or deviation from the desired value to reduce the deviation between the actual and desired values.

61. (Withdrawn) The system of claim 49, further comprising an evaluating unit and an adjusting unit operably coupled to said control unit, said control unit operable to change a position of the adjusting unit using at least one of the actual value or deviation from the desired value.

62. (Withdrawn) The system of claim 49, further comprising an evaluating unit operably coupled to said control unit, said control unit adapted to achieve a predetermined ablation profile using at least one of the actual value or deviation from the desired value.

63. (Withdrawn) The system of claim 49, further comprising an evaluating unit operably coupled to said control unit, at least one of said evaluating or control units operable to

automatically change a setting of the treatment system to reduce the deviation between the actual and desired values using at least one of the actual value or deviation from the desired value.

64. (Withdrawn) The system of claim 49, wherein the system parameter is selected from the group consisting of:

at least one of centration or position of the deflecting unit relative to a system for tracking eye movements;

at least one of the mean total fluence, energy, or power of the treatment laser beam;

a half-width of the treatment laser beam;

information about a spot shape of the treatment laser beam;

an energy distribution in a treatment spot;

characteristics of a transition zone between optically active and inactive ablation zones and their relation to beam parameters;

at least one of a short-term and long-term stability of or fluctuations in total fluence, total energy, or total power of the treatment laser beam;

short-term and long-term drift in the deflecting unit;

deviations from an optimal working distance;

an efficiency of suction or removal of fumes generated by ablated material during ablation;

temperature stability; and

a dependence of the system parameters on other ambient parameters.

65. (Original) A method for determining an actual value of at least one system parameter or a deviation from a desired value of at least one system parameter of an eye treatment system emitting a treatment laser beam, the method comprising:

ablating a surface of a calibrating body by at least one partial beam of the treatment laser beam according to a predetermined ablation program;

examining the ablated surface ablated with the treatment laser beam with at least one of aberrometry or profilometry to obtain examination data; and

using the examination data to determine an actual value of at least one system parameter or a deviation from a desired value of at least one system parameter.

66. (Original) The method of claim 65, wherein said calibrating body is plate-shaped in an area to be ablated.

67. (Original) The method of claim 65, wherein said calibrating body is spherically-shaped in an area to be ablated.

68. (Original) The method of claim 65, wherein said surface comprises a shape of a corneal portion of an eye to be treated.

69. (Original) The method of claim 65, wherein said calibrating body is polymethylmethacrylate.

70. (Original) The method of claim 65, wherein said calibrating body is non-transmitting for a wavelength of optical radiation used for measurement during said examination.

71. (Original) The method of claim 65, further comprising separating said treatment laser beam from optical radiation used for examination.

72. (Original) The method of claim 71, wherein the separating is performed using a filter.

73. (Original) The method of claim 65, further comprising arranging said calibrating body in a working plane of the eye treatment system during examination.

74. (Original) The method of claim 65, further comprising treating an eye.

75. (Original) The method of claim 74, further comprising alternately directing said treatment laser beam on the eye and said calibrating body.

76. (Original) The method of claim 74, further comprising splitting said treatment laser beam and ablating said calibrating body with a said first beam portion and treating the eye with another beam portion.

77. (Original) The method of claim 65, further comprising providing a measurement ray bundle to examine said calibrating body and coupling said measurement ray bundle colinearly to at least one of said beam portions to ablate said calibrating body.

78. (Original) The method of claim 65, further comprising modifying a wavefront to examine an ablation condition of said ablated calibrating body with aberrometry.

79. (Original) The method of claim 65, further comprising evaluating wavefront data relating to a wavefront to examine an ablation condition of said calibrating body with aberrometry.

80. (Original) The method of claim 65, further comprising performing said profilometry using an optically operating method.

81. (Original) The method of claim 65, further comprising determining said actual value or deviation from the desired value from the examination data for at least two system parameters.

82. (Original) The method of claim 65, further comprising comparing examination data with corresponding reference data.

83. (Original) The method of claim 65, further comprising examining a reference body having a predetermined ablation pattern by at least one of aberrometry or profilometry and using said examination data as reference data.

84. (Original) The method of claim 65, wherein the method is carried out in a cyclic manner, further comprising determining reference data for a current cycle using examination data of a preceding cycle.

85. (Original) The method of claim 65, further comprising determining at least one correction parameter value as a function of at least one of said determined actual value or deviation from the desired value, said correction parameter value usable to reduce at least one deviation from a desired condition.

86. (Original) The method of claim 65, further comprising modifying at least one corresponding setting of an adjusting unit of the treatment system as a function of at least one of the determined actual value or deviation from the desired value to reduce deviations from a desired condition or function.

87. (Original) The method of claim 65, further comprising modifying at least one of a position or an intensity of said treatment laser beam over time to achieve a predetermined ablation profile according to at least one of the determined actual value or deviation from the desired value.

88. (Original) The method of claim 65, further comprising modifying at least one of a position or an intensity of the treatment laser beam over time to achieve at least one parameter value for a

program according to at least one of the determined actual value or the deviation from the desired value.

89. (Original) The method of claim 65, further comprising automatically changing a setting of the treatment system using at least one of the determined actual value or deviation from the desired value to reduce the deviation between actual value and desired values.

90. (Original) The method of claim 65, further comprising selecting the system parameter from the group consisting of:

at least one of centration or position of the deflecting unit relative to a system for tracking eye movements;

at least one of the mean total fluence, energy, or power of the treatment laser beam;

a half-width of the treatment laser beam;

information about a spot shape of the treatment laser beam;

an energy distribution in a treatment spot;

characteristics of a transition zone between optically active and inactive ablation zones and their relation to beam parameters;

at least one of a short-term and long-term stability of or fluctuations in total fluence, total energy, or total power of the treatment laser beam;

short-term and long-term drift in the deflecting unit;

deviations from an optimal working distance;

an efficiency of suction or removal of fumes generated by ablated material during ablation;

temperature stability; and

a dependence of the system parameters on other ambient parameters.

91. (Original) A system parameter determining device for determining at least one actual value of a system parameter or a deviation from a desired value of at least one system parameter of a system for treatment of an eye by a treatment laser beam emitted by said system, the device comprising:

an examining unit to examine at least one portion of an ablated surface of an ablated calibrating body by at least one of aberrometry or profilometry; and

an evaluating unit operably coupled to the examining unit to determine an actual value of the system parameter or a deviation from the desired value of the system parameter with examination data determined during examination.

92. (Original) The device of claim 91, further comprising a filter and a photo detector, wherein said filter is selectively arranged to precede said photo detector in a beam path of said treatment laser beam, wherein said filter does not transmit optical radiation having a polarization or a wavelength of said treatment laser beam.

93. (Original) The device of claim 91, wherein said examining unit comprises an aberrometer.

94. (Original) The device of claim 91, wherein said aberrometer comprises a Hartmann-Shack sensor.

95. (Original) The device of claim 91, wherein said examining unit comprises an optically operating profilometer.

96. (Original) The device of claim 91, wherein said evaluating unit is configured to determine at least one of said actual value or deviation from a corresponding desired value from examination data for at least two system parameters.

97. (Original) The device of claim 91, wherein said evaluating unit is configured to determine the deviation from the desired value by comparing said examination data with corresponding reference data.

98. (Original) The device of claim 97, further comprising a memory for storing said reference data.

99. (Original) The device of claim 97, further comprising a reference body having a predetermined reference ablation pattern.

100. (Original) The device of claim 97, wherein said evaluating unit is configured to determine reference data during cyclic detection of examination data for a current cycle from examination data of a preceding cycle.

101. (Original) The device of claim 91, further comprising a correction value determining device to determine at least one correction parameter value of the treatment system as a function of at least one of the determined actual value or deviation from the desired value to reduce the deviation between the actual value and desired value.

102. (Original) The device of claim 91, wherein the system parameter is selected from the group consisting of:

at least one of centration or position of the deflecting unit relative to a system for tracking eye movements;

at least one of the mean total fluence, energy, or power of the treatment laser beam;

a half-width of the treatment laser beam;

information about a spot shape of the treatment laser beam;

an energy distribution in a treatment spot;

characteristics of a transition zone between optically active and inactive ablation zones and their relation to beam parameters;

at least one of a short-term and long-term stability of or fluctuations in total fluence, total energy, or total power of the treatment laser beam;

short-term and long-term drift in the deflecting unit;

deviations from an optimal working distance;

an efficiency of suction or removal of fumes generated by ablated material during ablation;

temperature stability; and

a dependence of the system parameters on other ambient parameters.